DOCUMENT RESUME

ED 157 926 TM 007 284

AUTHOR Melowsky, Fred; Ray, Joseph B.
TITLE Differentiating Reading Disabled from Normal Children with the Visual Discrimination Test.
PUB DATE Apr 75
NOTE 9p.; Paper presented at the Annual Meeting of the Southwestern Psychological Association (Houston, Texas, April, 1975)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Comparative Testing; *Diagnostic Tests; Elementary Education; *Perception Tests; Reaction Time; *Reading Ability; Reading Achievement; *Reading Difficulty; *Test Validity; *Visual Discrimination; Visual Measures; Visual Perception
IDENTIFIERS *Visual Discrimination Test (Ray)

ABSTRACT

A comparison of test results on the Visual Discrimination Test was made between a group of 22 reading disabled children and 22 children who were reading on or above grade level. Both groups were of average or above-average intelligence and the two groups were matched for age and sex. The mean age was 10 years and 3 months and all the reading disabled children were at least one year retarded as measured by the Peabody Individual Achievement Test. The 30-item test was scored for number right and for mean reaction time in seconds. There was no significant difference in reaction time, but the children with normal grade level reading ability had a significantly higher average score, indicating the test's ability to identify reading disability. This test screens visual discrimination ability independently from such variables as motor coordination or eye hand coordination, can be administered in five to ten minutes, and can be objectively scored in less than one minute. (Author/CTM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED157926

Differentiating Reading Disabled from Normal Children with the Visual Discrimination Test [1]

Fred Melowsky
Children's Psychiatric Center
Joseph B. Ray
Texas Tech University

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Fred Melowsky

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

IM007 284

[1] Paper presented at the Southwestern Psychological Association Annual Convention, April, 1975, Houston, Texas. The authors wish to thank Dr. John Rogers, Director, Texas Tech Reading Clinic for his grateful assistance with this study. All inquiries regarding the Visual Discrimination Test should be sent to Joseph B. Ray, Ph.D., Department of Psychology, Texas Tech University, Lubbock, Texas, 79409.

Abstract

A sample of reading disabled and normal children were instructed to look at the model design and point to one of the five alternate designs which replicated the model design. Normal children selected significantly more correct choices than did the reading disabled children ($p < .001$). No significant difference was found between the mean reaction time of the two groups. The value of the Visual Discrimination Test was discussed in terms of: eliminating the contaminating influences of motor skill and eye-hand coordination inherent in other tests, providing an objective measure eliminating scorer bias and ease in administration.

Differentiating Reading Disabled from Normal Children with the Visual Discrimination Test

While early identification of children with reading difficulties facilitates remedial intervention, the heterogeneous nature of reading disability makes diagnosis a difficult task. To diagnose a child with reading disability, it is necessary to appraise each factor involved in the total reading process. Four factors which Strang (1964) believes affect reading success in the first grade are: visual discrimination, auditory discrimination, range of information and mental age. The importance of visual discrimination skills in the early grades is supported by Thackray (1972) who states that both auditory and visual discrimination skills are highly correlated to reading achievement in the early stages. Wedell (1973), Kennedy (1971), and Smith (1963) have also discussed the importance that visual discrimination and perceptual functioning play in reading development.

Numerous studies have utilized the Bender-Gestalt test (1938) in diagnosing perceptual problems associated with reading disability (Koppitz, 1970; Koppitz, Mardis & Stephens, 1961; Smith & Keogh, 1962). However, poor performance on the Bender-Gestalt may result from a lack of motor skill, poor spatial ability, poor figure-ground perception, an integrative deficit or poor visual discrimination ability. It is not surprising that a number of studies (Connor, 1968; Coy, 1974; Giebink & Birsch, 1970; Keim, 1970; Zach & Kaufman, 1972) have failed to confirm the utility of the Bender-Gestalt in identifying the visual perceptual factors associated with reading disability.

The purpose of this study was to determine the utility of the Visual Discrimination Test as a diagnostic screening device in differentiating the reading disabled from normal reader. Previous research using this instrument found a significant developmental improvement among children from ages five to eleven (Daniels, 1972).

Method

Subjects

Forty-four children of average and above-average intelligence were studied. The reading disabled group contained 22 children whose ages ranged from 7.9 to 11.9 years, with a mean age of 10 years 3 months. All children in this group were at least one year retarded in reading as measured by the Peabody Individual Achievement Test and were enrolled in a remedial reading program at either Texas Tech University Reading Clinic or other local remedial reading facility. Boys comprised 84% of the sample, a sex distribution consistent with other studies on reading and learning disabilities (Bentzen, 1963; Silberberg & Feldt, 1968). The control group consisted of children matched for age and sex who were reading on or above grade level.

Instrument

The Visual Discrimination Test contains 31 geometric designs including nine original figures from its forerunner, the Revised Objective Perceptual Test (Fidel & Ray, 1972). Each geometric set consists of a model geometric design and five additional designs of which only one is an exact replica of the model. The remaining four distorted designs contain rotations, reversals, size discrepancies, angular differences and incomplete closures. To prevent a positional set preference, replica designs were randomly assigned to each of the five positions. The first design was a trial item and was not included in the scoring. Scoring was achieved by adding the number of correct choices for 30 designs.

Procedure

Each child was instructed to look at the model design and then point to one of the five alternate designs which was identical to the model. The child's response and reaction time were recorded.

Results and Discussion

The hypothesis that the Visual Discrimination Test would differentiate the reading disabled child from the child with normal reading ability was supported. The mean number of correct scores for the reading disability group and normal group were 21.7 and 25.3, with standard deviations of 3.2 and 2.6, respectively. The

difference was statistically significant, t (43) = 4.06, $p < .001$. The mean reaction time for the reading disability and normal groups were 3.73 and 3.78 seconds. This difference was not statistically significant.

A discriminant function analysis which determined the number of accurate classifications on the basis of the Visual Discrimination Test indicated that 73% of the reading disabled children were correctly identified. Four of the 12 misclassified children were normal readers who were identified as retarded readers while eight retarded readers were misclassified as normal readers. The four misclassified normal readers may have had minimal visual discrimination difficulty which did not interfere with their reading development. The reading disability of the eight misclassified retarded readers may have been due to factors other than visual discrimination difficulty.

The results indicate that the Visual Discrimination Test differentiates retarded from normal readers. Since the difference in average reaction times between the two groups was not significant, impulsivity cannot explain the lower performance of the retarded readers. The results support the contention that visual discrimination is a vital component in reading.

The results suggest that the Visual Discrimination Test can be used to identify those children whose difficulty in reading is due to visual discrimination and as a diagnostic screening device for preschool children. For those children already in school, knowledge of a child's visual discrimination skills would permit placement in a perceptual training program designed to correct his specific deficits. As a screening device, early identification would allow placement in either a normal or remedial program.

The Visual Discrimination Test provides objective information free from examiner bias about the child's visual discrimination ability by eliminating the contaminating influences of motor skill, eye-hand coordination and memory. This represents an improvement over such tests as the Bender-Gestalt, Visual Retention Test (Benton, 1963), and Memory for Design Test (Graham & Kendall, 1960).

In summary, the Visual Discrimination Test: (a) provides an objective measure of visual discrimination ability, (b) tests visual discrimination without contamination from such variables as motor control or eye-hand coordination, (c) is easy to give and can be administered in five or ten minutes, (d) can be scored in less than a minute and, (e) can be used to evaluate the developmental ability of visual discrimination in children.

Future research may focus on specific patterns of visual discrimination errors associated with reading disability, investigate the relationship between visual discrimination ability and reading readiness and compare group administration to individual administration of the Visual Discrimination Test.

References

Bender, L. A visual motor gestalt test and its clinical use. New York: American Orthopsychiatric Association, 1938.

Benton, A. The revised visual retention test. New York, Psychological Corporation, 1963.

Bentzen, F. Sex ratios in learning and behavior disorders. American Journal of Orthopsychiatry, 1963, 33(1), 92-98.

Connor, J. P. Bender Gestalt test performance as a predictor of differential reading performance. Journal of School Psychology, 1968-9, 7(4), 41-44.

Coy, M. N. The Bender Visual-Motor Test as a predictor of academic achievement. Journal of Learning Disability, 1974, 7(5), 317-319.

Daniels, L. Comparison of the Visual Discrimination Test and a copy modification of the test in normal children. Paper presented at Southwestern Psychological Association, Houston, Texas, April, 1975.

Fidel, E. A. & Ray, J. B. The validity of the revised objective perceptual test in differentiating among nonorganic, minimally organic, and grossly organic children. Journal of Special Education, 1972, 6(3), 279-284.

Frostig, M. Developmental test of visual perception. Palo Alto: Consulting Psychologists Press, 1966.

Giebink, J. & Birch, R. The Bender Gestalt test as an ineffective predictor of reading achievement. Journal of Clinical Psychology, 1970, 26(4), 484-485.

Graham, F. & Kendall, B. Memory-for-designs test: Revised general manual. Perceptual and Motor Skills, Monograph Supplement, 1960, 11(2-VII), 147-188.

Keim, R. Visual-motor training, readiness, and intelligence of kindergarten children. Journal of Learning Disability, 1970, 3(5), 256-279.

Kennedy, E. C. Classroom approaches to remedial reading. Itasca, Ill.: F. E. Peacock, 1971.

Koppitz, E. Brain damage, reading disability and the Bender Gestalt Test. Journal of Learning Disability, 1970, 3(9), 429-433.

Koppitz, E., Mardis, V., & Stephens, T. A note on screening school beginners with the Bender-Gestalt Test. Journal of Educational Psychology, 1961, 52(2), 80-81.

Silberberg, N., & Feldt, L. Intellectual and perceptual correlates of reading disabilities. Journal of School Psychology, 1968, 6(4), 237-245.

Smith, N. Reading Instruction for today's children. Englewood Cliffs, N. J.: Prentice-Hall, 1963.

Smith, C., & Keogh, B. The group Bender-Gestalt as a reading readiness screening instrument. Perceptual Motor Skills, 1962, 15, 639-645.

Strang, R. Diagnostic teaching of reading. New York: McGraw-Hill, 1964.

Thackray, D. V. Readiness for reading. London: Chapman, 1972.

Wedell, K. Learning and perceptuo-motor disabilities in children. London: John Wiley, 1973.

Zach, L., & Kaufman, J. How adequate is the concept of perceptual deficit for education? Journal of Learning Disability, 1972, 5(6), 351-356.